APPENDIX F
RADIOACTIVE MATERIALS (RAM)

Appendix F contains summary data about radioactive materials shipments. The vast majority of shipments are very small in size and involve such products as radio pharmaceuticals. Because SIC 28 includes radio pharmaceutical and other radioactive materials, the Table F1 estimate of 7,671 daily shipments is already reflected in Table 1, Table 2, and Appendix Table A1 data.

Fewer than 100 shipments per year over the last decade have involved highly radioactive spent fuel shipments from the nation's and some foreign nuclear power plants. These high level spent fuel shipments could increase to 300 - 400 shipments per year, if either an interim storage or permanent repository site became available. While having considerable implications for transport safety, the actual shipment, movement, and tonnage figures would remain only nominal -- and close to negligible at that.

Appendix Table F1: RADIOACTIVE MATERIALS (RAM) SHIPMENTS: Radiopharmaceuticals, Spent Fuel, and Nuclear Wastes

	Radiopharm and Other	Commercial Spent Fuel	U.S. DOE	TOTAL
Annual Tons	na	na	na	na
Annual Shipments (a)	2,794,400	< 100	5,500	2,800,000
Daily Tons	na	na	na	na
Daily Shipments	7,656	<1	15	**7,671**
Average Shipment Size	(b)	(b)	(b)	(b)

(a) "Transporting Radioactive Materials," U.S. Department of Energy, July 1997, p. 11. The 2.8 million total and the 5,500 U.S. DOE figure are given by DOE. The DOE shipments, for fiscal year 1995, include spent fuel, low-level and mixed waste, and uranium mill tailings. The 2,794,400 figure is the difference between the 2.8 million and the 100 and 5,500 figures. Commercial fuel figure is included in total and displayed for information purposes.

Spent fuel shipments from the nation's commercial nuclear power facilities, as well as import shipments from foreign facilities, have totaled fewer than 100 per year since 1988. Completion of a permanent repository, as contemplated for the Yucca Mountain site, NV, or an interim storage site, as discussed for the Nevada Test Site, NV, could result in an additional 300-400 spent fuel shipments per year.

Opening of the Waste Isolation Pilot Plant (WIPP) in Carlsbad, NM, could result in an additional 1,000 waste shipments per year. This storage facility would receive mostly used protective clothing, rags, tools, scrap metal, etc. transported in large, lead lined, stainless steel containers. Shipment origin points would be primarily various DOE facilities.

(b) The vast majority of radiopharmaceutical and other RAM shipments are the size of small packages, often weighing less than 1 pound per shipment.

In contrast, spent fuel shipments (material only) typically weigh 0.5 - 1.0 ton for truck shipments and up to 10 tons for rail shipments. Protective lead shipping casks, used to contain the material, weigh many additional tons.

NOTE: Radioactive materials are included by Bureau of Census in the SIC 28 Chemical and Allied products category, and thus the 7,671 figure is included in Table 1 and other tables in the SIC 28 shipment group.